Sharpening the Tip of the Spear: Is the Light Infantry Squad the Right Size for the Future Battlefield?

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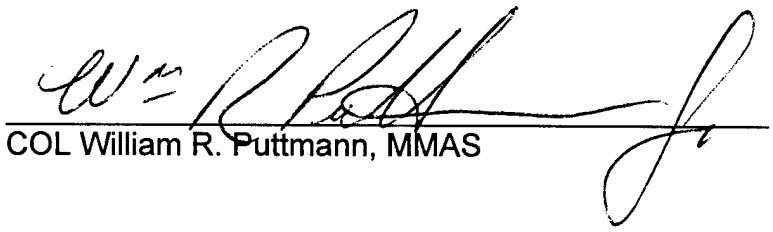

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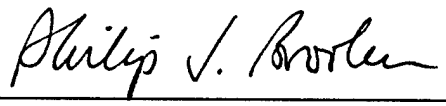

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ABSTRACT

Sharpening the Tip Of the Spear: Is the Light Infantry Squad the Right Size for the Future Battlefield? by MAJ James E. Rainey, USA, 52 pages.

As the United States Army prepares to redesign the Light Infantry Division, the issue of the correct size and organization of the squad is deserving of study. This monograph examines the issue by conducting three types of analysis. The first is a historical analysis of the evolution of the infantry squad from its inception through its current organization. The second is an analysis of the future battlefield and the capabilities that the future light infantry squad must possess to operate on that battlefield. The final analysis is a comparison of four proposed squad organizations.

Four criteria are used for this comparison. Sustainability deals with the ability of the squad to absorb casualties and continue to fight as an effective force. Span of control addresses the ratio of leaders to soldiers. Flexibility measures the ability of proposed organizations to adapt to changing conditions on the battlefield. The final criteria used for the comparison is leadership.

This monograph concludes that the current nine man light infantry squad is not the optimum organization for the future.

Table of Contents

Chapter One

Introduction

The subject of the future light infantry squad organization is extremely relevant for three reasons. First, the Army is about to begin the redesign of the Light Infantry Division. If this difficult process is carried out without first determining the optimum organization of its most basic building block, a great injustice will have been done to the future infantryman, the Army and our country. Second, the squad is the proverbial "tip of the spear". Infantry battles are won and lost by squads, this point has been clearly demonstrated throughout history and there are no indications that it will change in the future. The correct organization of the squad should be the primary goal of the infantry. Third, this topic has been hotly debated throughout the history of the United States Army and continues to be debated within the Infantry today.

The purpose of this monograph is to determine if the current light infantry squad is properly organized for the future battlefield. Three forms of analysis were used to answer this question. They were a historical analysis of the evolution of the squad in the United States Army, an analysis of the future battlefield in relationship to the

squad and finally a comparison of possible squad organizations against evaluation criteria.

The historical analysis served to identify constant qualities of effective squad organizations. These constants were then evaluated to determine if they would remain relevant in the future and if they could be used to compare possible solutions to the problem of the future organization of the squad. This section also provided interesting insight into the logic behind the numerous changes to the organization of the infantry squad.

The analysis of the future battlefield examined three issues. The first was the official Army position on the future battlefield and the capabilities it will require. Secondly, the opinions of other noted futurists were studied to determine if the Army position was overlooking relevant issues or if more detailed predictions were available. Finally, new and planned technology was analyzed to determine what effects, if any, it would have on the organization of the light infantry squad of the future.

The comparison used criteria developed from the historical and future analyses to compare the current light infantry squad organization as well as possible alternatives. The criteria that resulted from the historical analysis were span of control and sustainability, or the ability to absorb casualties. The analysis of the

future battlefield resulted in two additional criteria, flexibility and leadership. In addition to the current squad organization, three other possible solutions were evaluated using the same requirement based criteria. The purpose of the other three organizations was to provide for more complete analysis and to provide recommendations if the current organization proved to be less than optimum.

Before moving on, it is important to briefly address three other aspects of this study. The first is to clearly define the terms used in this monograph. Secondly, the length of this paper requires that the treatment of this subject be limited and therefore, those limitations must be clearly acknowledged up front. Lastly, the relevance of this topic, while obvious to some readers, will be reviewed.

For the purpose of this paper, the squad is defined as the smallest organic unit capable of independent action and fire and movement. It is currently organized with two, four man fire teams consisting of a rifleman, a grenadier, an automatic rifleman and a team leader, led by a squad leader.

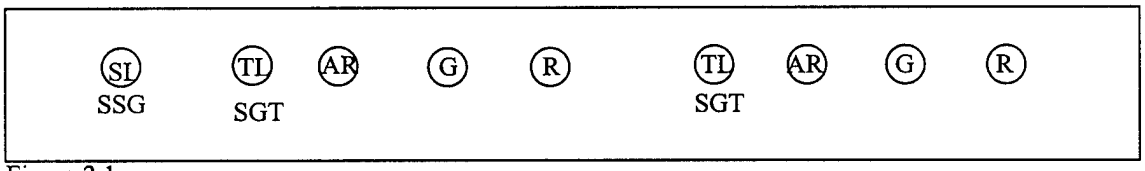

Figure 2.1

Its mission is to "close with the enemy by means of fire and manuever to defeat or capture him, or to repel his assault by fire, close combat, and counterattack."[1]

The term future is as nebulous as any that exists today. This paper uses the term to refer to the period out to the year 2010. This date was selected for several reasons. There is an adequate amount of material available, both official and civilian, to conduct an analysis. An equally important reason for the selection of 2010 as an end date was the fact that the technology scheduled and predicted for addition to the infantry squad can not accurately be forecast beyond that. Finally, 2010 is the benchmark set by both Joint Vision 2010 and Army Vision 2010.

The required level of detail of this study requires it to be limited in scope. In order to adequately address the areas discussed above, there must be areas that are left to other studies. One of these areas is that of weapons. This paper assumes that new weapons will be fielded equally to whatever squad organization the Army is using at the time. Therefore, weapons were evaluated in terms of types such as automatic rifles, grenade launchers and rifles rather than using specific systems as variables between the proposed squads.

Another area of limitation is that of technology. The only specific technology evaluated in this study is the Land Warrior System. This system has been tested and is scheduled for fielding in 2004. This system will have a

significant impact on the organization of the squad and can not be eliminated from any credible analysis.

Another notable limitation is that of the number of possible squad organizations used in the comparison. The number of combinations using the variables of size, weapons types and numbers of leaders is unmanageable. Therefore, the number was limited to four. In addition to the current organization, one additional organization was chosen because it was used in the past and has strong support among today's infantrymen. The third organization is unorthodox and was chosen because it provides a distinct contrast to the other three. The fourth organization was selected by the author.

The search for the correct criteria for the evaluation of these organizations covers both the past and the future. Chapter two captures the lessons learned from the history of the squad and chapter three looks at the future battlefield and the impact it will have on the squad.

Chapter 2

The Evolution of the Light Infantry Squad

From its origin in the American Revolution to its present configuration, the United States Army light infantry squad has evolved significantly. It has changed in numerous ways and for several reasons. This chapter will briefly summarize the most significant of those changes and attempt to determine the reasons behind them. The intent of this analysis is to determine what characteristics are consistently inherent to effective squads. The study of the evolution of the squad and the causes of that evolution provides an effective tool for determining those characteristics. When validated by relevance to current conditions, these characteristics serve as effective criteria for the comparison of proposed organizational solutions.

Revolution through the Civil War

From the inception of the United States Army until the Civil War, the squad as we know it today did not exist. Major General von Stueben organized the Continental Army according to a drill manual fashioned after the Prussian Army. The smallest unit that conducted independent tactical operations under this system was the platoon. Squads did exist, but were used solely for administrative and

disciplinary reasons.[2] This system remained relatively unchanged until the Civil War.

The Civil War's characterization as a transition war applies to the infantry squad as much as to warfare in general. The way squads fought changed dramatically during this war. The primary cause of this fundamental change can be found in the technological revolution in small arms that occurred prior to and during this period. Four major innovations regarding the individual weapons of soldiers occurred over a forty year period that would greatly change the way infantrymen fought. The first was the rifled musket which greatly improved range and accuracy. The second was the development of breech loading weapons that allowed soldiers to fire from the prone. The third major innovation was the invention of the magazine which greatly increased the rate of fire of the rifle. Finally, the new system was completed with the advent of smokeless powder which eliminated a firer's signature and greatly reduced battlefield obscuration. The result of these four major innovations was a great increase in lethality on the battlefield that led to dispersion of soldiers and ultimately to the squad as an independent organization.[3]

While the official drill manuals of both the Union and Confederate armies do not mention the squad as a tactical unit, it was during the Civil War that the need for squads

became apparent.[4] The major changes in weapons mentioned above led to new tactics such as looser fighting formations, advances by rushes, dismounted cavalry operations, more entrenchment and less use of the sword and bayonet.[5] The Armies of both sides informally adopted squad like organizations to deal with these changing conditions.

The infantry squad as a tactical unit first appeared in a 1867 manual on tactics written by Major General Emory Upton. Upton was a former Regimental Commander who had witnessed first hand the changes on the Civil War battlefield. He developed an eight man squad consisting of two four man ranks led by a corporal.
Upton's squad retained the ability to drill and march but could also fight independently under the command of its leader.[6] Upton's squad would serve as the point of departure for a series of reorganizations of the squad throughout the history of the army.

World War I

World War One was a defensive, positional war for the majority of infantry units. It was dominated by trench warfare and automatic weapons. These factors had a significant impact on the squad. Defense conducted primarily from trenches did not require delineation of platoons into squads. Offensive actions consisted of attacks in waves across no mans land by mass formations no

smaller than platoon. Individual soldiers were grouped by specialty such as bomber, grenadier, automatic rifleman or riflemen. The result of this type of warfare was the elimination of the squad as a tactical unit and its replacement by sections of specialists fighting under the control of the platoon.[7]

World War II

The infantry squad that would fight World War Two was established by T/O 7-17 in 1940. This squad consisted of twelve men with a sergeant as squad leader and a corporal as second in command. The squad was broken down into three teams, a two man scout team, a three man automatic rifle team armed with one Browning automatic Rifle and a team of five rifle men.[8]

There were several reasons for this major change. Foremost was the conclusion, based on WWI experience, that an eight man squad was not large enough to sustain casualties and continue to fight as a squad. Another reason for this change was a change in tactics from fire and movement to fire and maneuver. The squad was now expected to be able to support by fire or maneuver in conjunction with other squads. Additionally, the increase in size required an increase in leadership and therefore led to the increase in rank of the squad leader and the addition of an assistant squad leader. The final reason for this change was the

advent of automatic weapons such as the BAR at squad level and the Machine Gun at the weapons platoon level.

The three team squad concept was not always used as intended. Squads typically operated understrength due to casualties. The high percentage of casualties among platoon leaders and senior NCO's often resulted in squads being led by inexperienced soldiers who lacked the ability to conduct fire and maneuver as intended. Another problem with this organization was that the squad leader often moved with the scouts and frequently became pinned down when contact was made and could not maneuver his squad.[9] It was clear at the conclusion of the war that the problem of the organization of the squad had not been resolved.

The Infantry Conference of 1946

The organization of the infantry squad was one of the main topics at the 1946 Infantry Conference at Fort Benning, Georgia. A panel of distinguished combat leaders (Gavin, Abrams) was assembled to determine if the organization of the squad was satisfactory and if not, to recommend changes. The committee made four key assumptions in order to solve the problem. First, they assumed that the maximum number of men one leader could control in combat was eight. The second key assumption was that a squad must be able to take 25% casualties and still remain effective. This figure was based on experience from WWII. Third, the panel assumed

that the squad would be supported by a separate weapons squad at the platoon level. The panel's final assumption regarded the definition of a squad. They chose to define the squad as the smallest combat unit that can be controlled by one man. They assumed, by using this definition, that two squads would combine to form a section and that the section would conduct fire and maneuver. This final assumption is critical because what the panel called a squad is basically what we refer to today as a fire team.[10]

The committee looked at four areas and made recommendations regarding the composition of the squad. In terms of control, they concluded that one man could control eight men in combat using hand and voice signals. In terms of sustainability, they determined that a squad should be manned at a strength that would allow for 25% casualties. Regarding firepower, they determined that the squad should possess organic automatic weapons. Finally, they recommended that the squad conduct fire and movement, but not be split to conduct fire and maneuver.

The final recommendation of the Infantry Conference panel was that the infantry squad should consist of eight men plus one squad leader. Again, it is important to realize that using the definition of a squad as the smallest element that one man can control, the panel was advocating not a smaller squad, but rather a very robust fire team.[11]

In 1947, based largely on the recommendations of the Infantry Conference, T/O 7-17N changed the squad organization to nine men. The nine man squad consisted of one squad leader, one assistant squad leader, one automatic rifleman and six riflemen. The squad was not broken into teams. This T/O also formed a weapons squad at platoon level.[12] This squad organization was used at the beginning of the Korean War

The Korean War

The Korean war was both an offensive and defensive war fought over rugged, broken terrain. These factors led to greater dispersion and often forced squads to fight independently. While fighting independently, squads learned to fire and maneuver once again by splitting into two teams. An interim T/O change in 1953 allowed for one additional BAR per squad and an increase from nine to eleven men. The addition of the second BAR allowed the squad to split into two equal teams for the purpose of fire and maneuver. The two additional men were not routinely added due to personnel shortages. However, several units reported using ROK soldiers to form the eleven man squad when available.[13]

One of the major reasons for the above changes was a book written by SLA Marshall entitled Commentary on Infantry Operations and Weapons Usage in Korea. Marshall based his recommendations on observation of combat and interviews with

combat veterans. He believed that the two team squad would decrease and thus improve the span of control of the squad leader by giving him two team leaders. He also found that the team leaders added experience and leadership to the squad. Finally, Marshall believed that the addition of another BAR was required in order to give the teams equal capability and thus make them interchangeable.[14]

A Study of the Infantry Rifle Squad TOE

During the period from 1953 to 1956 the Army conducted three field tests and commissioned one major study to determine the optimum composition of the Infantry Squad. Operation Falcon and Exercises Follow Me and Sagebrush tested squad organizations in the field. A Study of the Infantry Rifle Squad TOE (ASIRS) was a study commissioned by Combat Operations Research group of the Continental Army Command.

Operation Falcon was a field test conducted by 18th Airborne Corps at Fort Bragg in 1953. It was designed to test the effectiveness of an eleven man squad. The major findings of this test were that an eleven man squad allows for the conduct of fire and maneuver and that it could sustain casualties and continue to fight. However, the test also found that eleven men was too big for one man to control effectively. It is important to note that the squad tested did not have team leaders.[15]

Exercise Follow Me was conducted in 1955 at Fort Benning and Fort Rucker by the Third Infantry Division. This exercise tested a seven man squad with a squad leader, assistant squad leader, one automatic rifleman and four riflemen. The seven man squad was found to be completely inadequate. The seven man squad could not sustain any casualties and remain effective. Additionally, one BAR was found to be inadequate to provide an effective base of fire. The final exercise report recommended that the squad consist of ten men including two teams and two BARs.[16]

Exercise Sagebrush was conducted at Fort Polk in 1955 by the Third Infantry Division. This exercise evaluated a nine man squad with a squad leader, assistant squad leader and two BARs. The exercise found that the nine man squad was too large for one man to control but too small to be divided into two teams. The exercise report for this test recommended a twelve man two team, two BAR squad. One team was to be led by the squad leader and the other by an assistant squad leader.[17]

A Study of the Infantry Rifle Squad TOE (ASIRS) incorporated the results of the tests mentioned above as well as additional studies and research. In total the study evaluated eleven possible TOEs using four criteria; fire capability, control, attrition and fire and maneuver. The study recommended an eleven man squad consisting of two

teams each with a team leader. The major reason for this recommendation involved span of control. The study found that the maximum span of control was one to five and that the vulnerability of the leader increased with the span of control.[18]

Reorganization of Current Infantry Division

In 1956, the Army underwent the Reorganization of Current Infantry Division (ROCID). Under ROCID, and based largely on the ASIRS findings, the squad was organized with eleven men, including two five man teams each with a team leader.[19] Another reason for the increase in squad size under ROCID, also known as the Pentomic Division, was perceived changes on the modern battlefield. It was believed that the future battlefield would be far more lethal and require greater dispersion. In the opinion of the organizers of the squad this required a larger squad organization.[20]

Optimum Composition of the Rifle Squad and Platoon and Rifle Squad and Platoon Evaluation Program

The Army conducted two more significant tests of squad organizations in 1961. The Optimum Composition of the Rifle Squad and Platoon (OCRSP) was conducted by the US Army Combat Development Experimentation Center at Fort Ord. The Rifle Squad and Platoon Evaluation Program (RSPEP) was conducted at Fort Benning by the Infantry School.

The OCRSP study looked at the 1965-1970 time frame to determine the best composition of the squad. The stated goal of this study was to create as strong a squad as possible, not merely to retain previous levels of effectiveness. OCRSP evaluated eight possible organizations and determined that an eleven man squad with two team leaders and two teams was the most effective. It also recommended one M60 per fire team to replace the BAR. OCRSP found that eleven men was the largest possible squad that could be controlled and that an eleven squad could operate with normal casualties. The study also concluded that covering ground involved more than weapons effects, soldiers were needed to detect and acquire targets and to observe sectors.[21]

RSPEP evaluated eight squad organizations in offensive and defensive exercises using both blank and live fire. This study used criteria of firepower, mobility, logistical capability and tactical capability. RSPEP concluded that the squad should consist of a squad leader and one four man team and one five man team. Each team would have a team leader.[22] The reason for the reduction was to package the squad for transport in an APC. The driver of the APC would be the eleventh member of the squad. RSPEP disagreed with OCRSP in regards to the M60. It determined that because the M60 was a three man system, it should be employed as part of

the weapons squad and attached as needed. RSPEP again validated the two team concept.[23]

Reorganization Objective Army Division

During the period from 1961 to 1964, the Army transitioned from ROCID to a new organization called Reorganization Objective Army Division (ROAD). During this transition, the Infantry received three new weapon systems: the M14, M79 and M16. Under this organization the squad dropped from eleven to ten men.[24]

While the official reason for the decrease was the increase in fire power and the packaging for the APC, it is possible that economic measures were also involved in the decision. During the period of 1961-1962 the Army increased from 14 divisions to 16. Economic measures and personnel shortages that resulted from this increase forced the Army to economize on personnel wherever possible.[25]

Vietnam

The Army fought in Vietnam with the ROAD squad. However, units were rarely manned at 100% strength and therefore this conflict did not provide an accurate evaluation of the ten man, two team squad. However, the Army was able to gather valuable data concerning the squad from a study on small unit combat experience in Vietnam. The study consisted of a survey of over 500 former platoon leaders, platoon sergeants, squad leaders and team leaders

who fought in Vietnam. The survey found that the eleven man squad was the preferred size for a squad and that at seven or eight men, the squad became a fire team. Additionally, 75% of those surveyed favored the squad leader with two team leader organization.

Infantry Rifle Unit Study

The Army conducted another ambitious test from 1967 - 1969. This study was the Infantry Rifle Unit Study (IRUS) conducted by the US Army Combat Developments Combat Arms Group. The purpose of this study was to determine the organization, equipment, tactics and techniques of the rifle squads and platoons of infantry units for the 1970-1975 time frame.

Phase I of the study ran from February to June of 1967. This phase looked at the size of the team and squad, the organization of the squad, communications requirements and small arms for the squad. The result of phase one was a recommendation that the squad be seven men and that it not conduct fire and maneuver. This was essentially a large fire team. This recommendation drew strong opposition from both the Continental Army Command and the Infantry School. This opposition led to phase II of IRUS.

Phase II ran from July of 1968 to September 1969. This phase of the study used field experimentation, computer simulation, judgmental analysis, cost benefit analysis and

data from past studies and AAR's.[26] Phase two evaluated seven possible squad organizations ranging in size from seven men to sixteen men and made up of one, two and three teams. Initial evaluation determined that eleven men was the smallest size squad that could sustain normal attrition and that the fourteen, fifteen and sixteen man squads were too large to control.[27]

The study then conducted further testing on the four remaining organizations. They were the seven man squad from phase I, a thirteen man squad consisting of two six man teams, an eleven man squad made up of two five man teams and the ten man ROAD squad. Further cost benefit analysis eliminated the seven and ten man organizations. IRUS found that the thirteen man squad was the best organization and that the eleven man squad was the smallest acceptable alternative.[28] In 1973, the Army increased the squad size to eleven men.

Division 86

The next reorganization of the squad began with a series of studies called Army 86 conducted by TRADOC from 1978 to 1980. The purpose of these studies was to determine light and heavy division and heavy corps designs for 1986 and beyond. Efforts to develop a light infantry division were guided by personnel ceilings based on deployment and budgetary requirements. After three attempts to reduce the

division to 12,000, the Army 86 study determined that the squad should be reduced to nine men.[29]

Army of Excellence

After concerns were raised at a 1983 Army Commanders Conference, the transition to Army 86 was stopped and efforts began to design the Army of Excellence. The primary concern of commanders was that the Army was becoming a hollow force. The goal of the AOE working group was to reduce end strength while maintaining capabilities.[30] AOE concluded that the Army could "sacrifice some robustness and redundancy in combat forces, but reduce the high overhead costs associated with many organizations "and "eliminate hollowness by providing a total force that could be fielded at ALO 1". [31]

The first recommendation under AOE was that the infantry squad be composed of ten men and three teams. This recommendation was opposed by the Infantry School Commandant because it was inconsistent with current doctrine. The TRADOC commander then directed that the squad use current doctrine and be comprised of two teams. [32] The final approved AOE squad was reduced to nine men. The reasons given for this reduction were:

1) To standardize the squad in all divisions.

2) The Bradley Fighting Vehicle was designed for nine men.

3) "To effect personnel savings which could be used to offset the Army shortfall in personnel authorizations".[33]

AOE created the Light Division. It built the division around a nine man squad. Additionally, AOE led to the creation of two new divisions, the 10th and the 6th.[34] The reduction in the size of the squad in conjunction with the AOE was more a product of personnel considerations and manning constraints than combat considerations. The AOE organization is the current infantry squad organization.

Several conclusions can be drawn from this brief historical analysis of the evolution of the infantry squad. Span of control has been a consistent factor in both the evaluation and determination of squad organizations. The ability to sustain casualties has consistently been identified as an essential quality for squads. Based on this analysis these qualities will be used as criteria for the comparison portion of this paper.

This analysis also makes clear the factors that should not be used to make decisions on squad organizations. Arbitrary decisions based on personnel and budget concerns should not be allowed to take the place of detailed studies, field testing and combat analysis.

Chapter Three

The Future Battlefield

The only certainty about the future battlefield is that there is nothing to be certain about. The dilemma this creates is how to organize a squad for the future without knowing what that battlefield will look like. The purpose of this chapter is to determine the characteristics that will be required of the light infantry rifle squad on the battlefield of 2010. Once identified, these characteristics will be added to those identified in chapter two and will serve as criteria for the comparison of proposed organizations in chapter four.

In order to determine infantry squad requirements on the future battlefield, it is important to first determine what that battlefield will look like. While it is impossible to do that with total certainty, there is a great amount of literature available on the subject. The official Army position is contained in TRADOC PAMPHLET 525-5, Force XXI Operations.

TRADOC PAM 525-5 addresses future military operations in the early decades of the 21st century. TRADOC PAM 525-5 predicts a future less likely to contain a major war, but very likely containing increased conflict. Shifting and unstable power balances, increased nationalism, the

rejection of western values, rivalry between state and non-state groups and increased population growth are some of the potential causes of future conflicts. Additional factors that may lead to US involvement are technological accelerations reordering military power, natural and man made environmental crises and the ability of information to manipulate communications media. These factors will lead to an increase in lower spectrum challenges spread over time and distance. These challenges will be complex and diverse.[35]

Future threats will also vary greatly. Phenomenological threats such as natural disasters, major population dislocations and illegal immigration may require a military response. Non-Nation forces will challenge the traditional nation state environment. Internal security forces will continue to cause instability in third world countries. Conventional armies will range from infantry based forces in the less developed countries to armor - mechanized based forces in the industrial countries to complex adaptive armies among the most developed countries.[36]

The most serious challenge for the US Army in the future will be the proliferation of weapons and technology. Weapons of mass destruction present the greatest threat to US interests. The increasing ability of enemies to use

technology to disrupt information operations poses another serious challenge. The growing ability to influence space operations and purchase space produced products will also reduce a significant US advantage.[37]

The large number of sources of potential conflict, the wide spectrum of enemies and the threat of proliferation all serve to cloud the future battlefield. As stated earlier, it is difficult to determine with any certainty who or what the future enemy will be. When the enemy cannot be clearly identified the army must turn from a threat based force to a capabilities based force.

The capabilities laid out in 525-5 are doctrinal flexibility, strategic mobility, tailorability and modularity, joint and multinational connectivity and versatility to function in war and Operations Other Than War.[38] These capabilities are all directly or indirectly linked to the infantry squad. The keys to doctrinal flexibility are quality leaders and soldiers who can adapt tactics, techniques, procedures and organizations to varying missions and situations. Strategic mobility is crucial, but only if the initial entry forces possess the lethality and survivability required to reach deep. As the basic building block of infantry units, squads play a major role in tailoring forces for specific missions. Interoprability with allies and sister services will not be limited to high

level staffs, contact on the battlefield will be made at every level including the squad. Finally, versatility in war and OOTW is dependent upon well trained and disciplined units that can remain ready for war and transition rapidly to OOTW.

In addition to official literature, a great deal of unofficial opinions are available. These opinions come from noted civilians as well as uniformed officers. The following discussion is offered to highlight differences and to reinforce official positions. The main point of divergence between official and unofficial positions is one of optimism versus pessimism. The majority of these opinions paint a much more challenging picture.

Two major themes emerge among the more pessimistic authors. The first is in regards to military operations in urban terrain. There is a large body of evidence that points to the likelihood of US involvement in urban warfare. The impact of this on a capabilities based infantry squad are significant and warrant further consideration.

One of the major indications of increased involvement in cities is the rapid expansion of urban areas. According to one report, in 1990 there were 270 cities with populations of one million and 21 with populations over eight million. By 2015 there will be 516 and 33 respectively.[39] Another study notes that by 2005 the

majority of the worlds population will be located in cities with 21 of the largest 30 being located in the developing world.[40] This rapid urbanization, especially when it occurs in unstable areas, points to a strong probability of MOUT in the future.

Another indicator leading to future MOUT operations is the traditional importance of cities. Cities have always been centers of gravity.[41] While the US army hopes to avoid urban operations, there are clearly circumstances that may demand MOUT operations. Key ports are almost always located in urban areas. Sometimes the only place the enemy will be is in cities. Cities often control lines of communication or are located between natural obstacles. In other cases, political considerations may override military ones and mandate urban operations.[42]

MOUT operations pose significant challenges for the squad. They are extremely manpower intensive. High casualties result from contact as well as accidents, broken bones, concussions etc.[43] One squad is limited to approximately one two story, five to six room building.[44] In Operation Restore Hope the average squad sector was limited to a 10-25 meter frontage.[45]

MOUT operations also strain leadership and demand flexibility. The fragmented nature of urban terrain compartmentalizes the battlefield and requires a smaller

span of control.[46] Missions change and are not always clear. A squad may be required to pass out food one block, break up a riot the next block and engage in brutal house to house fighting the next block. [47] Fighting occurs unexpectedly and at closer ranges than conventional operations. Subordinate leaders often find themselves separated from their higher unit by the enemy, fragmented terrain or lack of communications and forced to make critical decisions.

A third challenge presented by MOUT operations is the impact they have on technology. Official literature addresses the ways in which technology can aid US forces. There is no doubt that improved night vision, acoustical enhancers and non lethal technology will be extremely valuable in the future. However, there is another way to look at the issue that will be discussed later in this chapter.

The above factors may or may not guarantee an increase in MOUT operations. However, they clearly point to an increased probability of their occurrence. The MOUT fight has always been an infantry fight and it will remain one in the future. The squad of the future must be capable of fighting in urban terrain.

The second major theme among the unofficial futurists is the increased likelihood of stability and support

operations and there effect on units. The fundamental points of this line of thought are increased involvement, the complex nature of these operations and the challenges they present.

It is no secret that the Army has become more involved in stability and support operations in the past decade. Since 1990, the Army has conducted 80% of all Department of Defense contingency missions, resulting in a 300% increase in OPTEMPO. During that time frame, the army has also decreased in size by 35%.[48] There appears to be no reason to believe this trend will decrease. The result will be increased involvement by more units.

Stability and support operations are complex in nature. These operations are unstable and chaotic and are "highly dynamic and fraught with ambiguity". They involve unconventional or non existent enemies and large numbers of non-combatants.[49] The missions that are required to be performed by infantry squads in these environments cover a wide spectrum of conflict and are usually non traditional. In peace operations squads are asked to do everything from conventional operations to manning checkpoints to riot control. These tasks required specialized training and equipment. A squad level incident can also have strategic implications during stability and support operations.

Stability and support operations present very real challenges to a squad, in addition to those of offensive and defensive operations, which must always be considered. Like MOUT, these missions usually involve dispersion and increased autonomy. In Somalia, one Battalion Task Force sector was the size of Connecticut.[50] In order to cover that geographic area, squads must have the capability to operate with far less supervision than usual and at great distances from parent unit support and reinforcement.

Another challenge presented to the infantry squad in these types of operations is the diversity of missions they are assigned. Non traditional squad tasks such as checkpoints and presence patrols are harder to train for and execute. This fact manifests itself in two ways. First, the standard organization of the squad for warfighting is not always the best for these missions. Nine men may be too big for a checkpoint and too small for an independent patrolling operation. The second problem is that these missions place a greater strain on leaders. Squad leaders are faced with unfamiliar situations and required to simultaneously protect their soldiers, abide by rules of engagement and maintain impartiality.

The increased likelihood of peace operations, their complex nature and the challenges that they present effect the infantry squad of the future. To be prepared for these

operations the squad must be flexible and the leadership must be well trained and quite possibly increased.

There is no doubt that the infantry squad will remain relevant on the future battlefield. The question is one of what type missions the squad will perform. Regardless of which picture of the future battlefield becomes reality, some safe conclusions can be drawn. First, the infantry squad must always remain proficient at offensive and defensive tasks. Second, the squad must be well led and flexible enough to adapt to changing and unique situations encountered during peace operations. These operations will continue in the future and the infantry will continue to provide the bulk of the forces. Perhaps the biggest challenge facing the squad of the future is the strong possibility that it will be required to conduct one or both of these type missions in an urban setting.

The final piece of the future puzzle is to factor in the impact of new technology. As stated in the introduction, a thorough analysis of all the new technologies being fielded or planned for fielding between now and 2010 would require a separate monograph. Therefore this discussion will be more general in nature. The two major systems programmed for fielding in the next decade are the Land Warrior System and the Objective Individual Combat Weapon (OICW). For the purposes of this analysis, the

assumption will be made that these systems will improve situational awareness and squad firepower respectively.

As stated earlier, there is no doubt that technology will improve the squads capabilities in the future by increasing situational awareness and firepower. However, there are risks associated with technology. The first is a disturbing trend towards using technology to replace combat power rather than enhance existing forces. An example of this is the elimination of a Bradley or Tank company from the heavy battalions based on improved technology. The second, directly related to the first, is the question of reliability.

There is a paradox that exists between terrain and technology. The simpler the environment the more complex the technology must be. An example of this is space, a simple environment, requiring extremely complex technology. The inverse of this is that the more complex the environment the simpler the technology must be.[51] If this is true, and no environment is more complex that that occupied by light infantry squads, it would appear that reliability of complex technology in infantry squads merits some pessimism.

Still another potential challenge in regards to technology is a perception that new technology will allow for improved control. Optimistic views seem to point to situational awareness allowing for dispersion and ultimately

larger sectors for the squad. Some go as far as to suggest the squad of the future will equal a platoon of today.[52] A more conservative argument is that increased technology requires more direct supervision and that soldiers will only spread out as far as they can be and still see a fellow squad member.

The final danger with new technology and the squad is that of firepower. The OICW will tremendously increase the firepower of the squad. This increase is a benefit as long as it is the same squad in the same space with more firepower. The danger is in the use of firepower increases to justify larger sectors for the squad. Firepower involves more than weapons. It requires soldiers to observe and identify targets. The second problem is the fact that light infantry terrain rarely allows for engagements at maximum ranges.

What all this means to the organization of the future light infantry squad depends largely on the view of the future chosen and the level of risk that is accepted. A strong case can be made for planning against the worst case, especially when considering the critical role of the squad in any operation. Using this logic, the following conclusions can be drawn regarding the future battlefield.

The infantry squad must be able to accomplish all traditional missions on a more lethal battlefield. The

squad must also adapt to nontraditional stability and support operations involving unconventional missions. MOUT operations are highly probable and must be prepared for in organization, training and leadership. Finally, technology is good and should be leveraged whenever possible, but should not be used to reduce capabilities or increase responsibilities such as the number of missions or size of assigned sectors.

Based on these conclusions it is possible to identify characteristics that will be required of future infantry squads. Sustainability and span of control as discussed in chapter two remain relevant. Additionally, based on future requirements, flexibility and leadership must also be included as criteria.

Chapter 4

Comparison of Proposed Squads

The purpose of this chapter is to compare proposed squad organizations to determine the best option for the future light infantry squad. The comparison will be conducted using the criteria developed from the historical review in chapter two and the analysis of the future battlefield conducted in chapter three. This chapter will first define the key terms, then describe the squad organizations, and finally compare them using the criteria of span of control, sustainability, flexibility and leadership.

Before defining the criteria it is important to first define what constitutes a squad. Much debate has taking place recently and throughout history over the question of when a squad is no longer a squad. For the purposes of this paper, the current Infantry School definition will be used. According to Fort Benning, a squad consists of at least seven men under the control of a non-commisioned officer. According to Fort Benning, a squad ceases to be a squad when it drops below a strength of seven men. This position is based primarily on the fact that a squad must be able to field two teams of at least three men under the control of a squad leader. This definition was chosen because it is the

current Army position and it is also the simplest definition.

The first criteria that will be used is sustainability. Sustainability deals with the squads ability to take casualties and continue to accomplish its assigned mission. The concept of sustainability is tied directly to the definition of a squad. The concept of breakpoint is the key to this criteria. The breakpoint of a squad is when a given squad ceases to be a squad and becomes simply a large fire team. Using the definition of a squad described above, the breakpoint for the purposes of this analysis is six. When a squad reaches six men, it will no longer be considered effective. Sustainability will therefore set the lower limit of the future squad structure and be used as a more is better criteria.

The next criteria that will be used to evaluate the proposed squad solutions is span of control. The question of how many subordinates a leader can effectively control in combat has been the subject of innumerable studies and papers. For the purposes of this analysis the commonly accepted answer of three to five will be used. As seen in chapter three, new technology holds some promising possibilities for expanding this ratio. However, based on the fact that this expanded capability is unproven and that any improvement should be viewed as an enhancement rather

than a reason to eliminate capabilities, a ratio of one leader to three to five men will be used. A ratio of one leader to three men will be considered optimal and a ratio of one leader to more than five men will be unacceptable. Span of control will set the upper limit of the ideal squad organization.

The third criteria that will be used is flexibility. Based on the uncertainty of the future battlefield and the increasing number of missions the squad is being asked to perform, the squad's ability to rapidly task organize will be key to its success in the future. Flexibility as it applies to the squad is defined as the ability to form coherent sub-organizations in order to adapt and react to unforseen situations. These organizations must have NCO leadership and be no smaller than three men and no larger than five men to be considered a team. The more combinations that a squad can form the better.

The final criteria that will be used for this analysis is leadership. This criteria is a result of the future battlefield analysis, specifically the need for more leadership in the squad. This increased requirement for leaders is a result of the increase in complexity caused by the combination of advanced technology, diverse mission requirements and challenging conditions such as peacekeeping and MOUT. This criteria differs from span of control in

that it measures purely the number and rank of the NCOs in the proposed squad organizations with more obviously being better in terms of both rank and quantity.

The above criteria will be used to evaluate four proposed squad organizations. Squad A is the current nine man squad, Squad B is an eleven man, two fire team squad, Squad C is an ten man, three fire team squad and Squad D is a twelve man squad.

Squad A consists of a total of nine men. It is led by an E-6 and has two, four man fire teams. Each fire team is led by an E-5 team leader and consists of one SAW gunner, one grenadier and one rifleman.

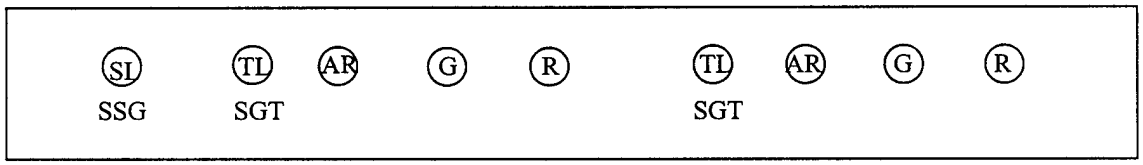

Figure 4.1

Squad B consists of a total of eleven men. It is led by an E-6 and has two, five man fire teams. Each fire team is led by an E-5 team leader and consists of one SAW gunner, one grenadier and two riflemen.

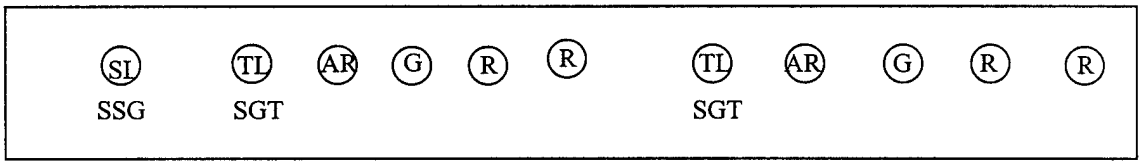

Figure 4.2

Squad C consists of a total of ten men. It is led by an E-6 and has three, three man fire teams. Each fire team is led by an E-5 team leader and consists of one SAW gunner, and one grenadier/rifleman.

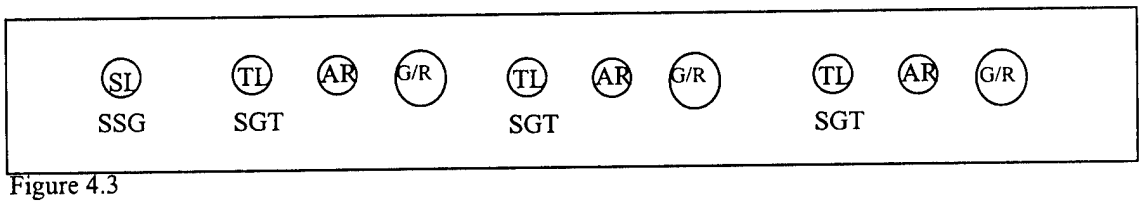

Figure 4.3

Squad D consists of a total of twelve men. It is led by an E-6 and has two five man fire teams. Each fire team is led by an E-5 team leader and consists of one SAW gunner, one grenadier and two rifleman. This squad also has one E-5 assistant squad leader.

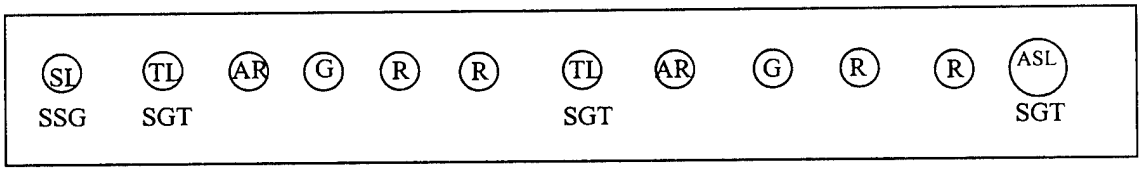

Figure 4.4

In terms of sustainment, or the ability to absorb casualties Squad D, the twelve man squad, is the best. This squad would be able to sustain five casualties before reaching the breakpoint. Additionally, either team could sustain two casualties and still function as a team. Squad B is slightly stronger than Squad C in terms of sustainment. However, because of its larger teams, Squad B can accept one casualty in a team where as a single casualty in a team from

Squad C would render it ineffective. Squad A, the current organization, scores the lowest in terms of sustainment. This squad can take only two casualties before reaching the breakpoint and its teams can take only one loss.

These casualty figures are based on mission accomplishment and do not include medical treatment or casualty evacuation. Obviously, all squads would reach the breakpoint sooner if forced to provide buddy aid which would result in the loss of two soldiers for every one casualty or litter evacuation which would result in the loss of three soldiers for every one casualty. Using these figures, Squad A conceivably would become combat ineffective with a single casualty that required evacuation.

Another factor that relates directly to sustainment is manning. The above figures assume the squads begin the operation at full strength. Historically, this has rarely been the case. A larger squad is therefore more sustainable in that it has a greater ability to begin operations at less than 100% manning.

In regards to span of control, Squad C is the best with four NCOs controlling ten men. Each of this squads team leaders controls only two soldiers. A drawback to this organization is the fact that the squad leader has three subordinates. Squads A and D both have ratios of one NCO per three soldiers. However, the fact that squad D has an

assistant squad leader who can float to the point where he is most needed or allow the squad leader to do so, gives squad D a slight advantage over squad A. Squad B has the highest span of control with three NCOs and eleven men. All of the proposed organizations are well within accepted levels.

For the analysis of flexibility, squads were divided into as many possible combat organizations as could be achieved while maintaining NCO leadership of each element and no less than three and no more than five members in a team.[53] With four NCOs and twelve men, Squad D can be tasked organized into six possible combat configurations. The next best was squad C with four NCOs and ten men resulting in five possible configurations. The third most flexible organization is squad B with three NCOs and eleven men resulting in three configurations. Tied for the third least flexible squad is squad A with three NCOs and nine men which also results in only three possible combat configurations.

The amount and experience of the NCOs in the various organizations was analyzed with the assumption that all grades would possess the same baseline skills across the board. It is not possible in this type of analysis to adjust for individual competence. Squad D and squad C both have one E-6 squad leader and three E-5s. However, squad D

has more experience based on the fact that all three E-5s in squad C are team leaders while one of the E-5s in squad D is an assistant squad leader who has successfully led a team already. Squad A and Squad B each have one E-6 squad leader and two E-5 team leaders and therefore are equal in terms of leadership.

The comparison of the proposed squad organizations can be summarized in graphic form as shown below (lower number is better):

Criteria / Squad	Squad A	Squad B	Squad C	Squad D
Sustainability	4	2	3	1
Span of Control	3	4	1	2
Flexibility	3.5	3.5	2	1
Leadership	3.5	3.5	2	1
Total	14	13	8	5

By ranking each organization using each of the criteria, with one being the best, it is obvious that Squad D is the best of the four organizations.

Chapter Five

Conclusion

The issue of the organization of the light infantry squad has been the subject of debate almost from its inception. The struggle to find the optimum organization continues today, especially as the Army attempts to organize for combat and other operations on the future battlefield. Based on historical analysis and examination of the future battlefield, criteria were developed and used to evaluate proposed organizations.

At least three conclusions can be drawn from this study. First, the current nine man squad is too small. This paper makes the case for a twelve man squad that is more capable of sustaining casualties, has a decreased span of control, is more flexible and has more leadership than the current nine man squad. While this may or may not be the optimum organization, it is clear that there are more effective organizations than the current one.

Second, the infantry squad has always been critical to successful ground combat and will remain so in the future. In order to be successful on the future battlefield, however, the infantry squad must adapt to changing conditions, situations and technology. The squad must be organized, trained and equipped for increased fighting in

MOUT environments. It must be well led and flexible enough to be decisive in stability and support operations. The squad must adapt to new technology and leverage it rather than allow technology to be used as a justification for reductions in size or the expansion of roles and missions. These three adaptations will ensure the effectiveness of the light infantry squad through the year 2010.

The final conclusion to be drawn from this study is the fact that this issue is in need of further study. The purpose of this analysis was to determine if the current light infantry squad organization is the correct one for the future, and not to determine what the optimum organization should be. In order to answer that question, Army level resources and emphasis are required. Prior to making final decisions regarding the Light Infantry Division Redesign, the Army should undertake an exhaustive study of this issue. Operational research and in depth field studies should be conducted. The building block of the new light division should be a new light infantry squad.

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[53] See possible combinations below:

Squad A
- 1x4x4
- 1x5x3
- 3x3x3

Squad B
- 1x5x5
- 3x4x4
- 3x3x5

Squad C
- 1x3x3x3
- 1x5x4
- 3x3x4
- 5x5

Squad D
- 1x1x5x5
- 3x4x5
- 1x3x3x5
- 1x3x4x4
- 4x4x4
- 3x3x3x3